Improvement on data distribution in South and Central Americas

EPUSP/PTR/LTG

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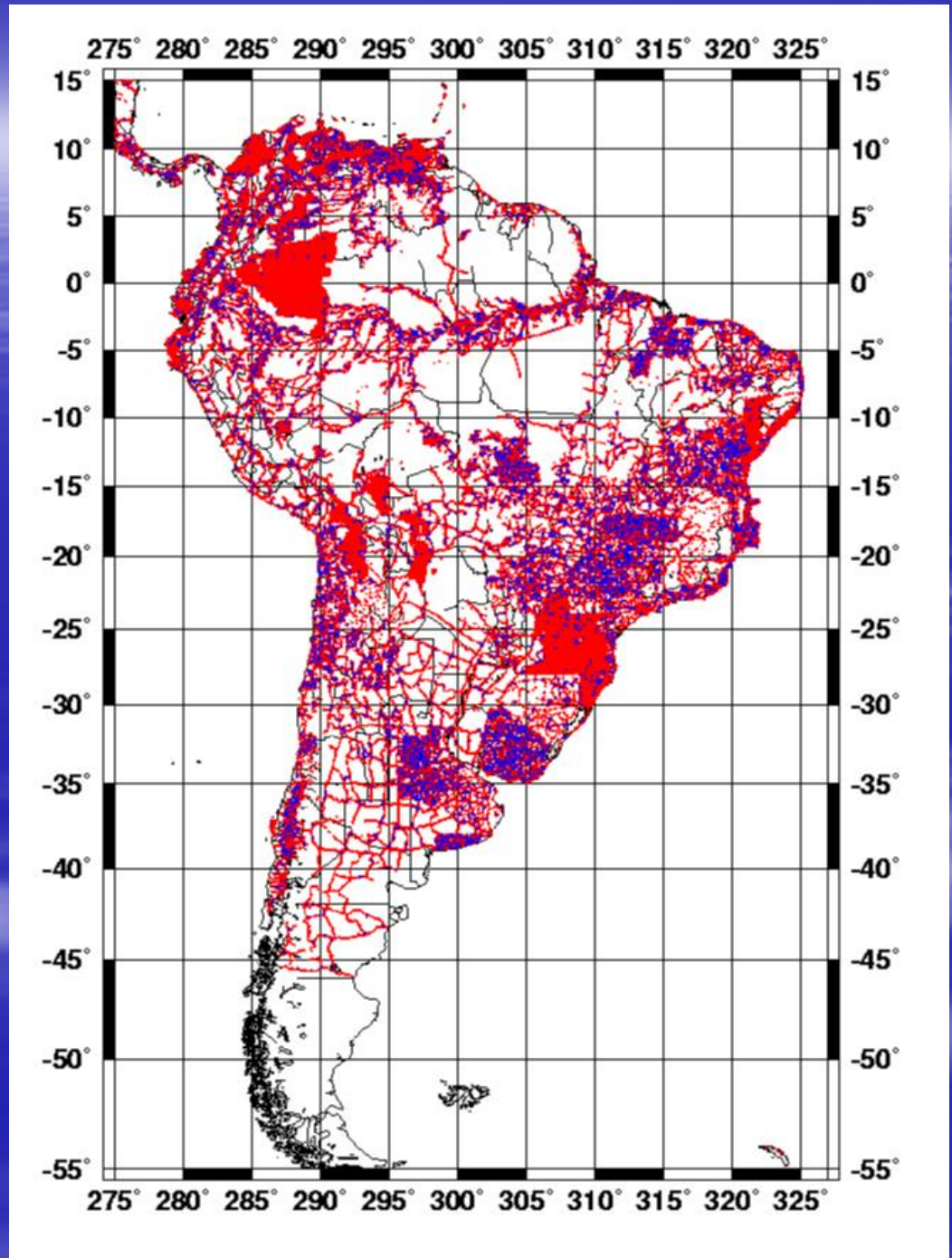
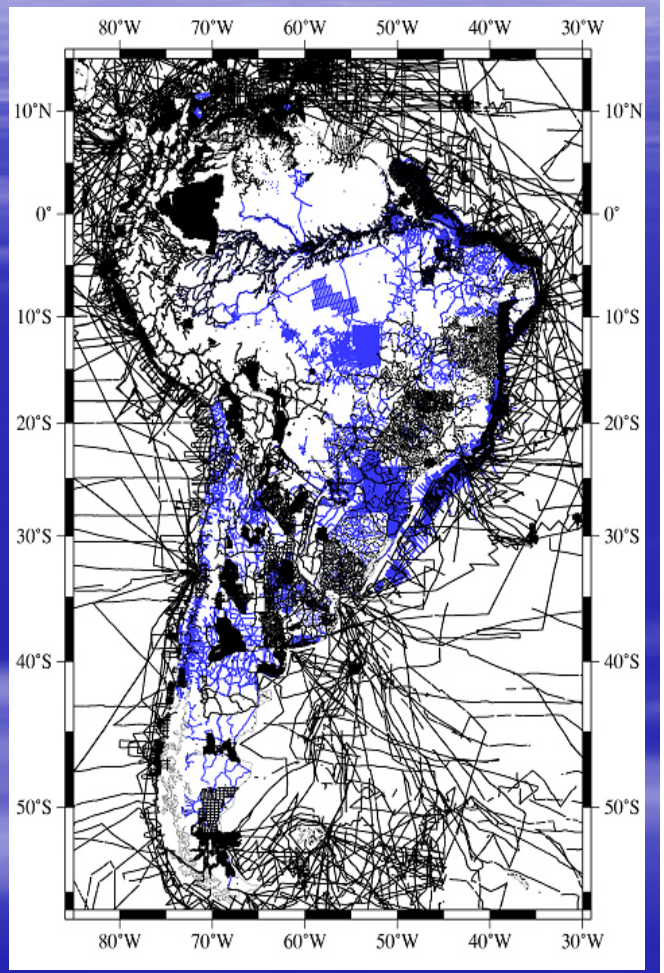
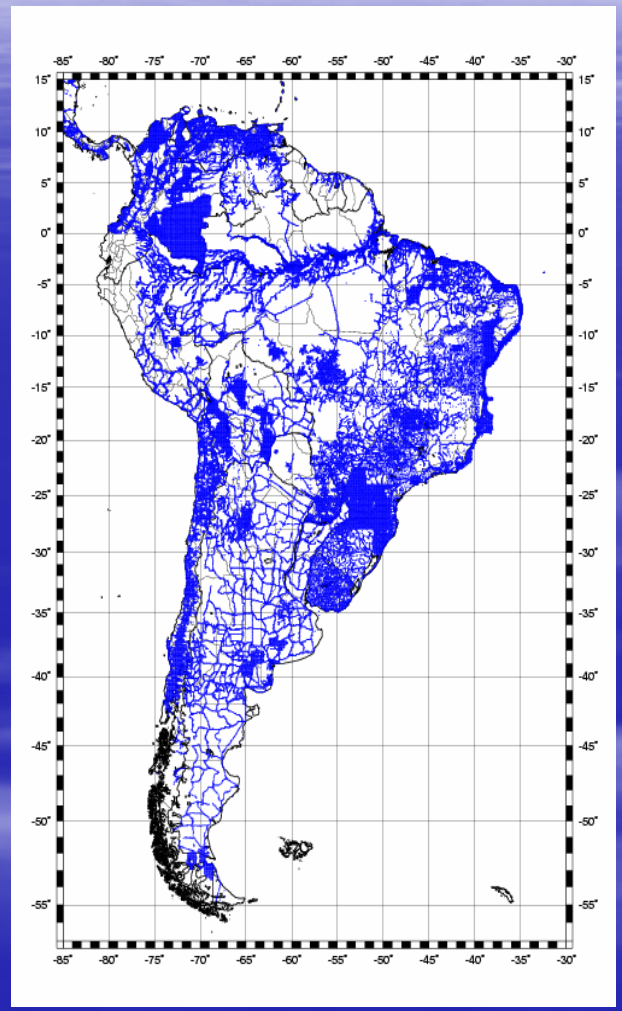
Gravity and height data in South and Central America extend from 60º S to 25º N in latitude and 25º W to 100º W In longitude. It includes all the countries in Central America. Many organizations have been cooperating with the efforts.



PRESENT GRAVITY DATA DISTRIBUTION – POINT DATA AND 5’ MEAN ANOMALIES





EPUSP constructed a Digital Terrain Model (DTM) entitled

"South American Model"

(SAM)

It is expected some applications like:

1. Geodesy and geophysics (terrain correction in the Bouguer anomaly and in the geoid calculations)

2. Engineering

CHARACTERISTICS OF SAM

1. Horizontal space grid: 1 minute of arc

2. Limits: Latitude: +25^{o} a -60^{o}

Longitude: -100^{o} a -25^{o}

3. Horizontal coordinate referred to:

"World Geodetic System 84" (WGS84).

4. Elevation in meters above Mean Sea Level.

DTM model developed by EPUSP/GETECH

Topographic maps (TM) digitised in Brazil, Argentina, Uruguay.

SAM DTM with resolution of 2 km:

Land maps

Scale of Brazil maps: 1:100 000 and 1:50 000

Scale of Argentina maps: 1:250 000,

Scale of Uruguay maps: 1:100 000

Offshore maps

Brazil maps: 109 nautical maps + 54 surveying maps + Leplac project (CHM)

Argentina maps

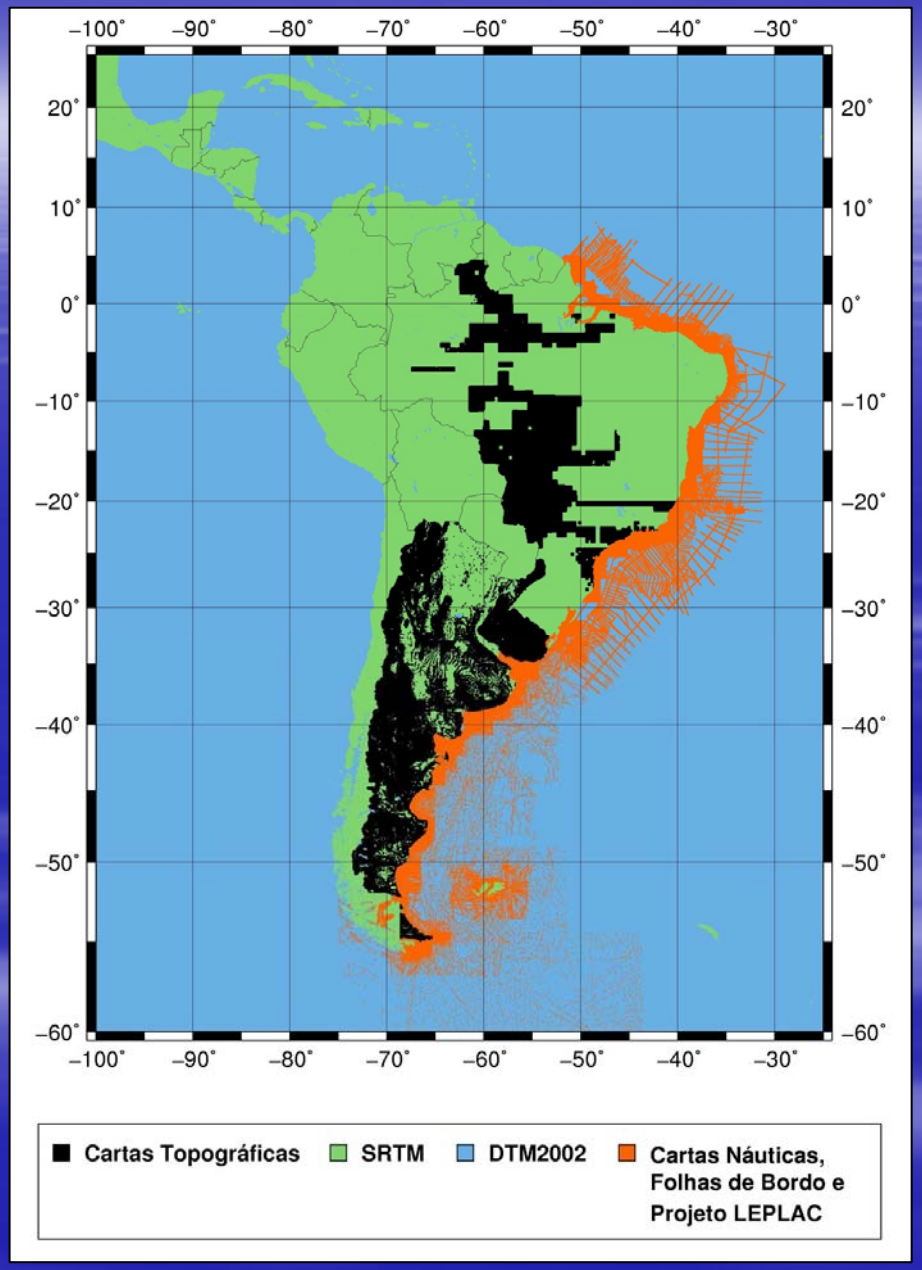
SAM

Topography maps:

- ✓Brazil (IBGE, Petrobrás e GETECH) 1:50.000 e 1:100.000
- ✓Argentina (IGM) 1:250.000
- ✓Uruguay (IGM) 1:100.000
- ✓+ SRTM+DTM2002

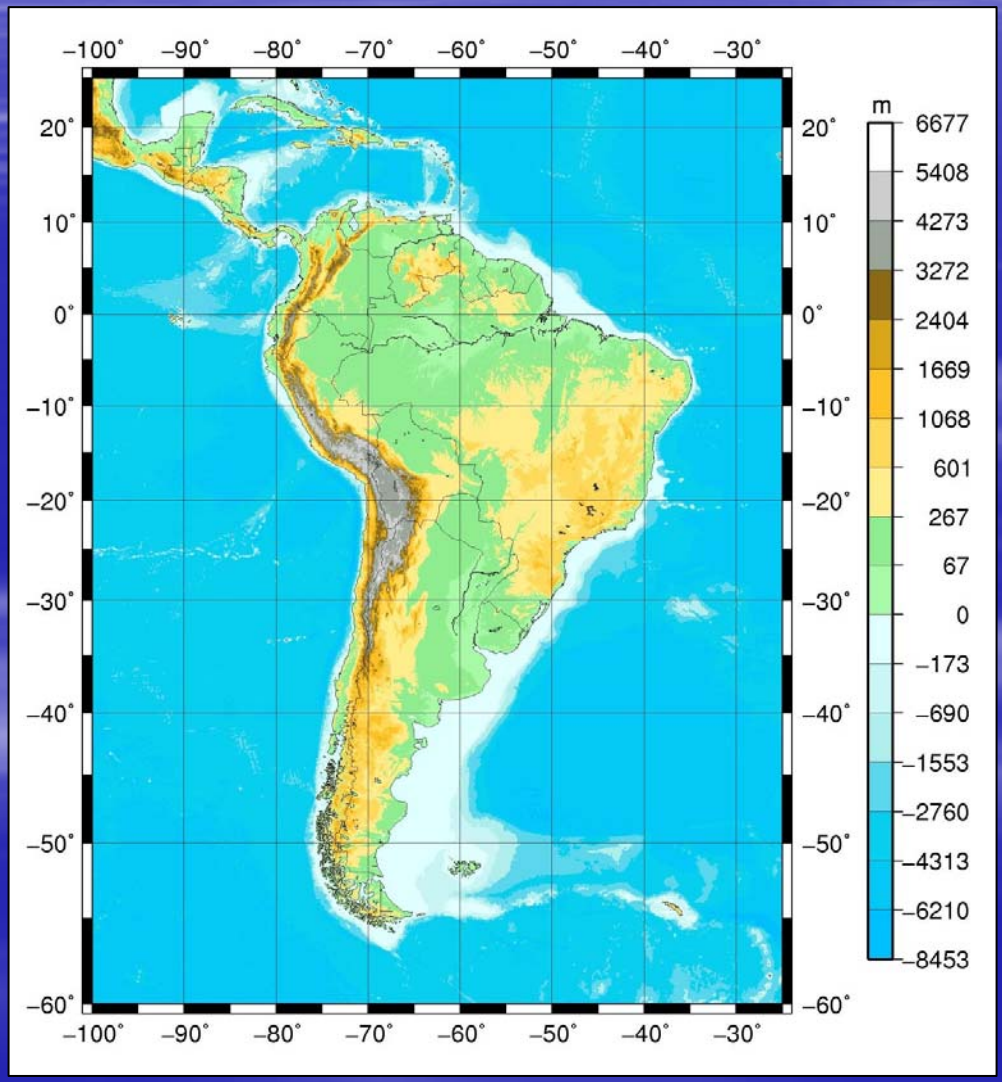
Offshore maps:

- ✓Brazil maps, Boarding maps, LEPLAC project (CHM)
- ✓Argentina maps (SHN)
- ✓+DTM2002



The SAM and analysis of SRTM for South America are available at:

http://www.ptr.poli.usp.br/ltg/proj/proj21.htm



Actual processing of the Geoid

- Numerical integration of the modified Stokes integral.
- FFT-1D application in the integration of the Stokes: attempt to modify or not the kernel
- Fast collocation with IGeS cooperation.
- Use of FFT for the terrain correction.
- Cooperation with NGA, IGeS, GETECH and now with GFZ.
- Strong cooperation of Gravity and Geoid Project in South America.

South America Geoid Model 2005